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IN THE

Supreme Court of the United States.

OCTOBER TERM, 1928.

No. 255 256

ALTOONA PUBLIX THEATRES INC.,

Petitioner,

AND

WILMER & VINCENT CORPORATION AND LOCUST STREET REAL ESTATE COMPANY,

Petitioners,

vs.

AMERICAN TRI-ERGON CORPORATION AND TRI-ERGON HOLDING, A. G.,

Respondents.

ON PETITION FOR A WRIT OF CERTIORARI TO THE CIRCUIT COURT OF APPEALS FOR THE THIRD CIRCUIT.

OPINIONS

Of the Courts Below in this Case, and the District Court's Findings of Fact in Petitioners' Favor.

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Record Press, Inc., 115 Fulton St., New York, N. Y.

The Findings Made by the District Court in Petitioners' Favor Which are in Irreconcilable Conflict With the Holding of Validity.

7. The claims do not include motion pictures but are for phonographic apparatus and phonographic methods whether or not used in connection with motion pictures.

III. Flywheel Principles, and Prior Knowledge and Use of Flywheels.

Findings of Fact:

8. As stated in one of plaintiffs' own exhibits, "A flywheel is the *classical* and unexcelled means of obtaining *uniform rotation*" (P. Ex. 44). The flywheel has been the everyday tool of the mechanic for a great many years.

9. Absolute uniform motion is an unattainable ideal. The degree to which uniformity is approached depends on the care exercised by the builder of the machine. Each machine designer determines the degree of uniformity required in practice in each particular machine and he then designs the machine to give that degree of uniformity. The difference in the uniformity of one machine compared with that of another machine is at most merely a matter of degree.

10. All rotating parts, whether or not made in the conventional form of a flywheel, have momentum and, therefore, all such parts tend to maintain uniform or constant speed. The conventional form of a flywheel is a wheel with a heavy rim (D. Ex. 71). But a flywheel is still a flywheel even though it be in the form of a gear, or pulley. The terms "balance wheel", "momentum wheel", and "flywheel" are synonymous.

11. As found by the Supreme Court nearly forty years ago in *American Road Machine Co.* v. *Pennock & Sharp Co.*, 164 U. S. 26, pages 34 and 39:

> "The knowledge was common that when a continuous power is applied, but the resistance to be overcome is unequal, a fly or balance-wheel will store some of the power expended during the operation and not needed at one stage, and give it out at another. . . .
>
> "The law of nature was familiarly understood that any moving body tends to continue in motion with a force proportionate to its speed and weight; and it was well known that the function of flywheels and balance-wheels was, in the language of Mr. Brevoort, 'to absorb energy when the machine is moving at greater speed with the least resistance, and to give it out again when the parts meet with greater resistance.'"

Therefore, what a flywheel always does is to store up energy when its speed is increased and give up energy when its speed is decreased. If the resistance to motion decreases so that the shaft starts to speed up, the flywheel absorbs the energy and resists and minimizes the increase of speed; and if the resistance to motion of the shaft increases so that it starts to slow down, the flywheel gives out its stored energy and resists and minimizes the decrease in speed.

12. The principles relating to uniform motion and its attainment by the use of a rotating heavy mass or flywheel were not only thoroughly understood many years ago but their application had become merely a routine matter of mathematics in machine design. The principles were so well known that they appeared in textbooks (D. Ex. 71) and in a decision of the Supreme Court many years before any date important here (*supra*).

13. There is an almost unlimited number of prior analogous uses of flywheels for giving constant speed

in various types of machines but flywheels were also used for that purpose in the phonographic art from the beginning of that art.

IV. The Patent in Suit Is Anticipated by and Also Lacked Invention Over the Prior Art.

Findings of Fact:

14. Edison was the father of the phonograph and also the father of the motion picture as known today. Edison applied for his patent No. 227,679 (D. Ex. 74), in 1879, in which he disclosed a large flywheel, mounted directly on the shaft which carried the sound record so that the flywheel controlled the speed of the sound record directly at the point at which the sound was recorded and from which it was reproduced, *i. e.*, the translating point. It appears from this Edison patent that as early as 1879 Edison fully understood the principles of uniform motion and that uniform motion could be obtained in a phonograph by means of a flywheel. Notwithstanding he was the first to use a flywheel in a phonograph, Edison's claim for this use of a flywheel was rejected by the Patent Office as being "a mere double use of a flywheel as ordinarily used with machinery for the purpose of securing uniformity of motion" (D. Ex. 73) and, because it "involved but the exercise of ordinary good judgment and did not require inventions" (D. Ex. 73).

15. Edison used heavy flywheels in his commercial phonographs as early as 1878, as appears from the Edison instruction book (D. Ex. 120-B), an original of which is in the Smithsonian Institution. On page 3 of that book the phonograph with its heavy flywheel mounted directly on the mandrel shaft is shown, and it is stated, "Heavy flywheel, to give uniform motion (Very important)". Flywheels for obtaining uniform motion in Edison phonographs are also disclosed in Edison patents Nos. 386,974 of 1888, 499,879 of 1893 and 513,095 of 1894 (D. Ex. 74).

From 1879, when Edison stated and applied the principles of uniform motion to the phonograph, until the present time those principles have been employed in all phonographs. One or more rotating heavy masses have been employed without exception, the size of the mass being determined by the degree of speed constancy desired in each particular machine.

16. In recording commercial phonograph records for home use, Edison exercised particular care that they should be recorded with a high degree of uniformity. Defendants' Exhibits 31 and 155 are two original Edison machines which were used at the Edison recording laboratory in New York considerably before 1921 for recording Edison commercial phonograph records. Each of these machines has a heavy flywheel directly and rigidly mounted on the record mandrel shaft. These flywheels produce a high degree of speed constancy as was shown by defendants' demonstration during the trial.

29. Optical slits are disclosed in Bell and Tainter patent No. 341,213 of 1886 (D. Ex. 74, see Fig. 1, and p. 1, ll. 61-69, p. 2, ll. 68-88); Duddell patent No. 24,546 of 1902 (D. Ex. 74, see p. 3, ll. 22-40); in the application for Trowbridge patent No. 1,447,913 (D. Ex. 74), filed in 1920, in the Trowbridge machine of 1919 and in the article by Rankine in the "Proceedings of the Physical Society of London" of 1920 (D. Ex. 74). Moreover, Bell and Tainter not only disclosed but also received in their above mentioned patent which issued in 1886 the following combination claim, including the optical slit and mechanism (the flywheel) for giving uniform motion to the photographic tablet:

> "The apparatus for recording sound vibrations photographically, consisting of the following elements in combination, namely: *the condensing-lens, the plate or block provided with a slit,* the means for varying the quantity or intensity of the energy transmitted

through said slit, the recording-tablet, *the lens for projecting an image of the slit on the tablet, and the mechanism for giving a uniform surface-speed to the tablet under said image, substantially as described.*"

30. A damped-spring phonograph drive is shown in the prior Constable patent No. 1,425,177 (D. Ex. 74), and an inherently damped resilient phonograph drive is shown in combination with a flywheel in Amet patent No. 1,221,407 (D. Ex. 74). Other examples of resilient drives in combination with a flywheel are: Gally, 210,249; Holst, 587,527; Wood, 724,645; Ebeling, 1,255,143; Lanchester, 1,085,443; Rowland, 691, 667; Jamieson British 2,814; Baron British, 21,371; French patent 414,788; and French patent of Addition 10,377 (See D. Exs. 74 and 75).

The Opinion of the District Court, Reported in 5 F. Supp. 32.

In the District Court of the United States, in and For the Middle District of Pennsylvania.

In Equity, No. 971.

American Tri-Ergon Corporation, Tri-Ergon Holding, A. G.,

Plaintiffs,

v.

Altoona Publix Theatres, Inc.,

Defendants.

In Equity, No. 972.

American Tri-Ergon Corporation, Tri-Ergon Holding, A. G.,

Plaintiffs,

v.

Wilmer & Vincent Corporation and Locust Street Real Estate Company,

Defendants.

Appearances:

Messrs. Kaufman & Mattes, Scranton, Pennsylvania, attorneys for plaintiff;

Hugh M. Morris, Esq.; S. Mortimer Ward, Esq., Page S. Haselton, Esq., of counsel;

Messrs. O'Malley, Hill, Harris & Sarris, Scranton-Pennsylvania, attorneys for defendants;

Charles Neave, Esq.; Henry R. Ashton, Esq., J. Huff, W. J. Barnes, Esq., of counsel.

OPINION.

The bill of complaint charges the defendants with infringement of letters patent No. 1713726 relating to photographic sound on film recording and reproducing. The plaintiffs in each suit are American Tri-Ergon Corporation, assignee of the patent, and Tri-Ergon Holding, A. G., exclusive licensee for certain purposes. The nominal defendant in the first suit is the Altoona Publix Theatres, Inc., which leases and operates the machine about which complaint is made, known as "P. S.-16". The nominal defendants in the second suit are Wilmer & Vincent Corporation which operates the machine of which complaint is made, known as "P. S.-1" and the Locust Street Real Estate Company which leases the machine and owns the theater. In each suit the real defendant is R. C. A. Photophone, Inc. a wholly owned subsidiary of Radio Corporation of America which leases the machines and is defending in the suit.

Hans Vogt, Joseph Massolle and Josef Engl, three German inventors who had previously secured patents in Germany for a sound picture machine, made application, as joint inventors, in the United States on March 20, 1922, for the patent in suit and on May 21, 1929, the patent in suit was issued to William Fox, assignee, from whom the plaintiff, American Tri-Ergon Corporation has become assignee of the patent in suit.

In their answer the defendants deny the validity of the patent in suit and also deny infringement. On the pleadings and evidence, two main questions arise for disposition; first, the validity of the patent in suit; and, secondly, its infringement by the defendants.

First, as to the validity of the patent: The patent in suit relates to phonographs or sound heads with linear sound records, but more specifically to apparatus and methods whereby sound is translated by light to or from

a photographic film strip. The specification and drawings describe and show apparatus and methods involving a film strip with a photographic sound record wherein the sound is translated by acoustically modulated light. The apparatus is especially useful for sound on film sound pictures. The apparatus is directed to a sound on film sound heads in an assembly designed for the production of sound on film sound pictures, since the sound track is arranged on the film alongside of the pictures and the apparatus is so organized that it may be placed above or below the picture projection head and have the film run from one to the other with the protecting loops in the film where it enters and leaves the sound head mechanism. The patent describes several features which co-operate to give high quality sound on film sound reproduction without appreciable sound distortion, in order to attain sound reproduction sufficiently realistic to accompany motion pictures, as follows:

First, means for momentarily giving the short active length of film in the sound head the property of a weighty mass in such manner as to obtain a high degree of uniformity of speed at the translation point; secondly, a focused fine line of light known as an "optical slit" for recording and reproducing; thirdly, bending the film arcuately at the translation point; fourthly, a photo-electric cell for reproducing the sound.

In each of the constructional forms shown in the patent, the film is either wrapped around a substantial portion of the flywheel roller under tension so as to avoid relative slippage one with respect to the other, or is passed over a substantial portion of a flywheel sprocket to insure meshing with a number of the teeth of the sprocket so that in both cases the portion of the film engaging the member secured to the flywheel is definitely harnessed to it to prevent relative movement so that the film moves in exact conformity with the member secured to the flywheel and thus has given to

it at the translation point, the property of a weighty mass. The flywheel with its film engaging sprocket or roller, is located on a shaft at or adjacent to the translation point and is either isolated by the spring drive from the irregularities of the driving mechanism, or is isolated from the driving mechanism by being driven by the film.

The plaintiffs' patent contains nineteen claims of which seven are in suit; claims 5, 7, 9, 13, 17, 18 and 19. These seven are directed and limited to the apparatus wherein or methods whereby sound is translated by light to or from a film strip; claims 9, 13, 18 and 19 as granted and claims 5, 7, and 17 by disclaimer. Claims 5, 7, 13 and 17 are apparatus claims and 9, 18 and 19 are method claims. These claims describe several features all cooperating to eliminate disturbances and distortions of the sound, giving reproductions sufficiently realistic to accompany motion pictures, a result never previously accomplished with sound on film sound pictures. The patent in suit discloses an apparatus and method which successfully establishes a new and important art, sound on film sound pictures.

The evidence shows that the patentees were the first to demonstrate by public exhibition sound on film or sound on film sound pictures in 1922 with one of their machines. Machines built in accordance with the claims of the patent have been demonstrated and used at various times and places down to the trial during which time they were successfully demonstrated in the hearing of the court.

The defendants contend that the patent is invalid for the following reasons:

First, because the patent is anticipated by the prior art, prior patents, inventions, publications and uses; secondly, because of a grant of at least one earlier foreign patent to the same patentees for the same alleged invention upon application filed in Germany more than

twelve months prior to the filing in this country of the application for the patent in suit; thirdly, because the patent contains insufficient disclosures and is indefinite and inoperative; fourthly, because new matter was introduced into the application while pending in the patent office so that the patent as issued is for a different invention from that originally applied for; fifthly, because the application was unlawfully expanded in the patent office to cover the practical art so developed in the meantime and gone into public use; sixthly, because the disclaimer filed within a few days before the trial is invalid, and, seventhly, because the alleged invention was not a joint invention of the three patentees.

First, as to the prior art. The combination and method of the claims at issue are not found in any prior art citations and are new and useful. Anticipation of such claims is not made out by selecting a part from one prior art citation and parts from others or by modification of prior art devices which were not designed, adapted or actually used for the purpose. Topliff *v.* Topliff, 145 U. S. 156. None of the defendants' citations anticipates the claims at issue since none give in substance the same knowledge and the same directions as the specifications of the patent in suit. Skelly Oil *v.* Universal Oil, 31 F. (2d) 427. It must also be considered that patents which are inoperative or useless for the purpose of the patent in suit are not anticipations. Consolidated *v.* Window Glass Mch., 261 F. 362. Anticipations are not made out by the operation of prior devices with important or essential parts omitted. Eck *v.* Kutz, 132 Fed. at 779. An unappreciated use does not anticipate. Tilghman *v.* Proctor, 102 U. S. at 711. Oral evidence of prior use or discovery must be clear and satisfactory. Eibel Process case, 261 U. S. 45.

In Richmond Screw Anchor Co. *v.* United States, 275 U. S. 331, 339, it was said: "It is argued on behalf

of the United States, that Lenk's invention was unpatentable because it embodies nothing more than a natural and normal modification of existing ideas. Such modifications and their advantage were all very clear after the fact; . . . No one else had foreseen its advantage. Lenke offered it as a solution of the problem at a minimum cost with a maximum efficiency, . . . While thus, in a way, he improved an existing idea, he developed a new idea."

In the case of Hobbs *v.* Beach, 180 U. S. 392, it is stated: "While none of the elements of the Beach patent—taken separately or perhaps even in a somewhat similar combination—was new, their adaptation to this new use and the minor changes required for that purpose resulted in the establishment of practically a new industry, and was a decided step in advance of any that had heretofore been made" . . .

"We agree with the courts below that it did involve inventions to see that a machine of the Dennis and York types was adaptable to the work of the Beach device, and second, to make such changes as were necessary to adapt that device to its new function."

The defense of invalidity on the ground of the prior art is not sustained.

Secondly, because of a grant of at least one earlier foreign patent to the same patentees for the same alleged invention upon application filed in Germany more than twelve months prior to the filing in this country of the application for the patent in suit.

The evidence shows that the original German patent was inoperative and that the invention claimed in the foreign patent is not the same invention as claimed in the patent in suit. Leeds & Catlin case, 213 U. S. 301. The defense of invalidity under R. S., Sec. 4887 puts a heavy burden on the defendants which they have not overcome. General Electric Co. *v.* Alexander, 280 F. 852.

The claim that the patent in suit is invalid under R. S. Sec. 4887 is not sustained.

Thirdly, because the patent contains insufficient disclosures and is indefinite and inoperative. The dislosures of the patent are sufficient. The fact that the patent in suit discloses apparatus and methods which enable successful establishment of sound on film sound pictures overcomes this contention.

Fourthly, because new matter was introduced into the application while pending in the patent office so that the patent as issued is for a different invention from that originally applied for.

Fifthly, because the application was unlawfully expanded in the patent office to cover the practical art so developed in the meantime and gone into public use.

The answers to the fourth and fifth claims of invalidity are the same here. The amendments to the claims while pending were related to the original claims and were applicable to the invention and were disclosed in the original drawings and specifications. The patentees were entitled to secure in the patent in suit their actual invention as disclosed in the original drawings and specifications, and were entitled to amend their claims while their application was pending. Heller Bros. *v.* Crucible Steel, 297 F. 39.

The amendments were properly allowed and the claim of invalidity on the ground of the amendments cannot be sustained.

Sixthly, because the disclaimer filed within a few days before the trial is invalid. The disclaimer limits the patent and does not enlarge it. The subject matter of the disclaimer is consistent and in accordance with the teachings of the patent. No part of the disclaimer

broadens or purports to broaden the scope of the claim of the patent. The presumption of validity of the patent in suit is unaffected by the disclaimer and the claims in suit here, as modified by the disclaimer, are valid. Carnegie Steel case, 185 U. S. at 435.

Seventhly, because the alleged invention was not a joint invention of the three patentees. The evidence shows that the patentees worked together and jointly on this invention that the patent in suit is a joint invention of the three patentees within the meaning of the statute, and the burden of proof rests on the defendants to show that the patent in suit was not a joint invention of the three patentees. Thropp *v.* DeLaski, 226 F. 949; Hal, Signal *v.* Union, 115 F. 638.

The claim of invalidity on the ground that the patent is not a joint patent cannot be sustained.

As bearing on all of these claims of invalidity, it must be borne in mind that the grant of a patent carries with it the presumption of validity.

"The authorities hold that, to overcome this presumption, the burden of proving want of novelty rests upon him who asserts it, and every reasonable doubt should be resolved against him. The evidence must be exceptionally clear and convincing; as many authorities have said, it must be full unequivocal and convincing. Coffin *v.* Ogden, 18 Wall. 120." Window Glass Mach. Co. *v.* Smethport Window Glass Co., 266 F. 85, at page 93.

Under the evidence and legal authorities, all of the defendants' claims of invalidity of plaintiffs' patent are overruled and the patent in suit is sustained as valid.

Secondly, as to the infringement. The plaintiffs charge that six of the claims, 5, 7, 9, 13, 18 and 19 are infringed by defendants' machine "P. S.-1" and that five of the claims, 9, 13, 17, 18 and 19 are infringed by defendants machine "P. S-16". Defendants' machine "P. S-1" em-

bodies the invention of claims 5, 7, 9, 13, and 18 and defendants' machine "P. S-16" embodies the invention of claims 5, 7, 9, 13, 18, and 19. Claims 5, 7, 9, 13, 18 and 19 were applied by plaintiffs' expert witness, Ballard, element by element, to defendants' "P. S-1" machine and the same witness applied claims 9, 13, 17, 18 and 19, element by element, to defendants' "P. S.-16" machine and all of the evidence in the case show that these two machines of defendants infringe plaintiffs' patent in suit.

The plaintiffs and defendants have submitted proposed findings of fact and conclusions of law which have been answered and are filed herewith.

In conclusion the court finds that the plaintiffs' patent No. 1713726 is valid and that claims 5, 7, 9, 13, 18 and 19 of the patent are infringed by defendants' "P. S.-1" machine and that claims 9, 13, 17, 18 and 19 of the patent are infringed by defendants' machine "P. S.-16". It follows that plaintiffs are entitled to the usual decree for an injunction reference, accounting and costs in accordance with this opinion; and it is so ordered.

ALBERT W. JOHNSON,
United States District Judge.

November 24, 1933.

The Opinion of the Court of Appeals (Unreported).

IN THE

UNITED STATES CIRCUIT COURT OF APPEALS,

FOR THE THIRD CIRCUIT.

No. 5392. March Term, 1934.

ALTOONA PUBLIX THEATRES, INC.,
Defendant-Appellant,

v.

AMERICAN TRI-ERGON CORPORATION AND
TRI-ERGON HOLDING, A. G.,
Plaintiffs-Appellees.

No. 5393. March Term, 1934.

WILMER & VINCENT CORPORATION AND
LOCUST STREET REAL ESTATE COMPANY,
Defendants-Appellants,

v.

AMERICAN TRI-ERGON CORPORATION AND
TRI-ERGON HOLDING, A. G.,
Plaintiffs-Appellees.

APPEAL FROM THE DISTRICT COURT OF THE UNITED STATES,
FOR THE MIDDLE DISTRICT OF PENNSYLVANIA

OPINION.

(Filed June 13, 1934.)

Before BUFFINGTON, DAVIS and THOMPSON, *Circuit Judges.*

BUFFINGTON, *Circuit Judge.*

This is an appeal from a decree of the district court holding claims 5, 7, 9, 13, 17, 18 and 19 of United States Patent No. 1,713,726, valid and infringed.

The main contest below and here is on the validity of the claims in suit. If they are valid, infringement, while not admitted, is rather feebly pressed. The patent, including the claims in issue, is presumptively valid, both as to novelty and utility. Lehnbeuter *v.* Holthaus, 105 U. S. 94; Johnson Automobile Lock Co. *v.* Noser Instant Auto Lock Co., 9 Fed. (2d) 265, 267; Galvin Electric Mfg. Co. *v.* Emerson Electric Mfg. Co., 19 Fed. (2d) 885. This follows from the grant of the patent by the Commissioner of Patents and the finding of the district judge. Apparently extrinsic evidence was necessary to explain the terms and state of the art and after hearing in open court that evidence, much of which was conflicting and directly contradictory, the trial judge, upon extensive findings of fact and conclusions of law, held the claims in issue to be valid and infringed. We could affirm the decree upon his able and comprehensive opinion. Where facts have been found by a proper party or tribunal, a decree based thereon will not be reversed by an appellate court unless it is obvious that a plain mistake has been made. Tilghman *v.* Proctor, 125 U. S. 136, 149; Crawford *v.* Neal, 144 U. S. 585; Furrer *v.* Ferris, 145 U. S. 132; Davis *v.* Schwartz, 155 U. S. 631, 636; Hutchins *v.* Munn, 209 U. S. 246, 250. No such mistake appears here. However, we have decided to state our own conclusions upon the facts and the law.

The patent deals with recording photographic sound on film and the reproduction therefrom for use in talking moving pictures as distinguished from recording and reproducing sound on disk which had long been used on phonographs. The patent contains both apparatus and method claims. Of the claims in issue, claims 5, 7, 13 and

17 are for an apparatus and claims 9, 18 and 19 are for a method.

The art of photographic sound recording involves the translation of light upon a photographic film. Reproduction therefrom involves translation of the sound record on such a film into acoustically modulated electric currents through the medium of light. The patentees claim to be the first to have conceived this idea. However that may be, the practical problem was how to utilize it in overcoming distortion in reproducing sound in talking moving pictures.

Ruhmer, the German scientist, had the idea and tried to solve the problem of using it in the production of talking moving pictures, but without success, and his abandoned experiments are recognized as only a crude beginning of what the patentees after years of patient research accomplished. Edison also had the idea but his efforts, culminating in the use of a cylinder phonogram, synchronized with a picture machine, failed to produce any results that had any effect upon the art. Others tried and failed. The patentees working together for years on this problem finally solved it and gave to the world a machine and method which revolutionized the moving picture art and drove "sound on disk sound pictures from the market".

The inventors had to overcome many difficulties before they successfully produced and translated sound on film sound pictures. One of the difficulties was to overcome what is called "distortion" of sound. Records on picture film contain many hundreds per inch of precisely placed photographic fine lines varying in frequency and transparency according to complex sound vibrations. In order to record sound without distortion, the spacing and transparency of these lines must vary precisely in accordance with the acoustically modulated light which is being photographed. In the reproducing machine, these fine photo-

graphic lines must be rapidly moved without disturbance of their frequency relationship through a focused beam of light at the point of sound translation, the light being varied according to the sound record. This acoustically modulated light shines on what is known as the photo-electric cell which converts the light variations into modulated electric currents which vary in proportion to the light variations. These light variations in turn vary according to the spacing and degree of the transparency of the photographed lines.

Light acts without inertia or friction and so does not distort the most complex and rapid sound vibrations. Attempts to use a beam of light for sound reproductions were futile before this invention, because of the presence of many disturbing factors such as irregular, intermittent and vibratory movement of the film at the translation point caused mainly by take-up reels, driving gear, imperfect meshing of the sprocket with the perforations in the film and the varying friction and irregular deflections of the film in the "straight light gate". These had never been segregated and diagnosed and then collectively remedied, until the patentees did it.

They discovered that this photo-electric cell acts without inertia in cooperation with the light beam, and that the rapidly moving, flimsy, curling film must be uniform in its movements and so controlled that the position and motion of each fine line at the beam of light must be accurate within the thousandth of an inch per small fraction of a second. Unless this is so, the synchronism between the sound and movements, in talking moving pictures, is destroyed and the reproduction a failure.

In the place of the "straight light gate", they eliminated the troublesome transverse curling and irregular buckling of the film at the sprocket perforations by arcuately bending the film longitudinally. This gave firmness to the film at the focal point of the optical

system, permitted it to be free from physical supports which accumulated dust and scratched and displaced the film. They thus prevented vibrations.

The well known function of a flywheel is to give uniformity of motion by absorbing energy when speed is increased and by releasing it when speed is decreased, but this knowledge was not enough to solve the problem of preventing sound distortion in recording sound on film and in reproducing the same for which uniformity of motion is absolutely necessary. The patentees utilized this knowledge of the function of a flywheel which they made an element of their new combination in order to secure the necessary uniform motion of the flimsy film as it passed over the sound head. This small piece of trembling flimsy film, without appreciable weight, charged with the vibrations as it comes from the adjacent, intermittent movements of the picture machine, traveling over the sound head at the speed of ninety feet per second, required a uniformity measured in thousandths of an inch per small fraction of a second in order to accomplish successfully photographic sound in film reproduction by the use of extremely fine transverse lines of light. The flywheel, as used in this combination, does not attempt to regulate the irregularities of the motor and other rotating parts of the picture machine. It regulates only the small length of the film which is passing over the roller at the translation point and gives it the steadiness and uniformity of the speed which it itself possesses.

The effectiveness of the flywheel in producing uniformity of speed and in preventing irregularities and consequent distortion of sound was increased by the use of a flexible spring connection between the driving means and the flywheel shaft. While springs and elastic couplings were old, yet in this new combination it was an element which was instrumental in producing the uniformity of rotation which was never secured in the prior art.

Again they used a focused fine line of light, called an "optical slit" through which light penetrated to record

and reproduce sound. This takes the place of the old mechanical slit located directly against the film in which dust and dirt collected, obstructing light and scratching the sound record.

The prior art does not disclose this combination nor the result which it produced. The evidence shows that the moving, talking picture art was looking for something like this. The defendants point to some seventy patents, some having one element of the patent in issue, and some another, but none have this combination and none produce the result of this combination. The patentees were the first to accomplish successfully and commercially photographic sound on film reproduction. The suggestions and prophecies found in paper patents were confusing and not helpful.

This new combination of the patent was not obvious to one skilled in the art for no one else had discovered it, although many were working on it and it required years of patient study and research before the patentees were able to work out this combination and method, although some of the individual elements were old, one being found here and another there in inoperative paper patents. The defendants were unable to produce a single anticipation among the seventy or more paper patents upon which they relied.

The trial judge said that the combination and methods of the claims of the patent in issue are not found in any prior art citations and are new and useful. A close study of the citations confirms this finding. No one before the patentees was able to bring together all the elements of the patent into a successfully operative combination. Each of these elements coact directly with the others to produce a new and useful result, the prevention of sound distortion. It is well settled that a new combination, every element of which is old, is patentable if it produces a new and useful result, or an old result in a "new and materially better way", or an "old result in a more

advantageous way". Proudfit Loose Leaf Co. *v.* Kalamazoo Leaf Binder Co., 230 Fed. 120, 127; Galvin Electric Mfg. Co. *v.* Emerson Electric Mfg. Co., 19 Fed. (2d) 885, 890; Hailes *v.* Van Wormer, 87 U. S. 353; Palmer *v.* Corning, 156 U. S. 342, 345; Grinnell Washing Machine Co. *v.* Johnson Co., 247 U. S. 426, 432. The patent in issue unquestionably comes within the law as thus declared.

The old cylinder or disk gramophones had flywheels or speed regulators as the patent states, but the problem there was very different from the problem here, where uniformity of speed is so absolutely necessary to reproduce photographic sound on film which is so highly sensitive to the many sources of irregularity of speed. To give uniform speed to each short piece of film, so light and flimsy that it is practically weightless, as it passes over the sound head, was the problem which the patentees alone successfully solved.

All that need to be done in order to show that the patent in suit is an entirely new combination and accomplished a new and useful result is to read and study the patent itself and then read and study any or all of the prior art patents relied on by appellants.

Defendants allege that the findings of fact made by the court are inconsistent, that those made in their favor are inconsistent with those made in favor of the plaintiffs.

These findings were presented to the court and requested by the parties respectively. Those specially referred to by defendants relate to the well known function of flywheels generally and are not inconsistent with the findings in favor of plaintiffs when considered in connection with the combination of the patent.

One of the defenses raised by the appellants is that the invention is not a joint invention of the three patentees.

The first question arises as to what constitutes joint invention of two or more persons. The authorities are unanimous in holding that joint inventions are made

when two or more persons jointly work or collaborate in devising and putting into practical form the subject matter of the patent in question. Robinson on Patents, Vol. 1, page 567, says:

> "It is not necessary that the same idea should occur simultaneously to each. On the contrary, it is immaterial who first conceives any particular theory or plan of the invention or in what order the development of its subordinate ideas proceeds. Where two or more inventors have agreed that a result, if it could be achieved, would be desirable, neither as yet having attempted to provide a means, and from this point go forward by mutual consultations and suggestions to devise one, the means devised becomes a joint invention. . . . In short, wherever, before the entire conception of the invention by one inventor, another meets him and by his consent unites with him in exercising inventive skill upon the development and perfecting of the conception, the product of their joint endeavor is a joint invention. . . .
>
> "The same variety is possible in the exterior relations of the joint inventors, where the inventive act consists in the repeated trial of experiments. The exact part which each performs is of no consequence. Nor does it matter that one has been experimenting long in vain, nor even that he may have made some actual advance toward the discovery to which he aspires. It is enough if the experiment which finally succeeds—the one which demonstrates the practicability of accomplishing the end in view and indicates the means by which it is attainable—has been conducted under their united supervision, and in accordance with ideas and theories to which both have contributed."

In the case of DeLaski & Thropp Circular Woven Tire Co. *v.* William E. Thropp & Sons Co., 226 Fed. 941, Judge Woolley, speaking for this court said:

> "In a machine containing as many elements as this one, it is not to be thought nor by the laws required, that the inventive conceptions of two inventors shall

develop simultaneously. One may conceive a general or imperfect outline of an entirely novel thing, which without the conception of another developing it and giving it body, might never amount to invention; but if the conceptions of one supplement and complement the conceptions of the other, the result might be invention and therefore joint invention. 'When a claim covers a series of steps or a number of elements in a combination, the invention may well be joint, though some of the steps or some of the elements may have come as the thought of but one'. Quincey *v.* Krause, 151 Fed. 1012, 1017, 81 C. C. A. 290; American *v.* Wood, et al. (C. C.) 189 Fed. 391, 395. In this case we do not have to resolve doubts in favor of the patent under the rule which requires unquestionable proof that joint patentees are not joint inventors. United Shirt & Collar Co. *v.* Beattie, 149 Fed. 736, 741; Butler *v.* Bainbridge (C. C.), 29 Fed. 142, 143; Priestley *v.* Montague (C. C.) 47 Fed. 650, 651."

"It may be considered as well settled that in order to constitute persons joint inventors, it is not necessary that exactly the same idea should have occurred to each at the same time, and that they should work out together the embodiment of that idea in a perfected machine. One may be a joint inventor, even though the conception of the entire device may be due to another if he makes suggestions of practical value which assisted in working out the main idea and making it operative, or contributes an independent part of the entire invention, which is united with the parts produced by the other and creates the whole." 48 Corpus Juris, 120 Sec. 134, citing many cases, among them Worden *v.* Fisher, 11 Fed. 505, 508, where Judge Brown said:

"If an idea is suggested to one, and he even goes so far as to construct a machine embodying this idea, but it is not a completed and working machine, and another person takes hold of it, and by their joint labors, one suggesting one thing and the other another, a perfect machine is made, a joint patent may properly issue to them."

These extracts epitomize the authorities from text books and decisions on this subject.

The undisputed testimony shows that no one of the inventors had ever done any work in sound recording or reproducing prior to the time when they came together in 1918, pooled their interests and entered into an agreement to work together. This being true, they further agree that no one of them would file an application in sound work in his own name which was natural and logical since they had agreed to work together, and since they were to work together, supplementing each others' ideas, work and experience, the arrangement among them as to filing applications was perhaps a wise one in order to prevent internal strife as to how much the invention in any case was due to any one of them. If they did so work, and the evidence shows that they did, they filed the application in the only way in which they legally could. All three of these men worked together every day during a number of years, and discussed matters relating to their work, sometimes in adjoining rooms and sometimes in the same room around the same table, conferring and exchanging ideas and using a common note book, one suggesting and doing one thing and the other suggesting another thing, one supplementing the work of the other two. This related to the removal of the flywheel, to the photo-electric cell and the whole combination. "These inventions . . . we spoke about were made conjointly by the three inventors", said Dr. Engl.

While the testimony does not show the specific work which each co-inventor performed, nor the extent of it, yet it does show, and that without contradiction, that the three of them were jointly working together as one man daily, each contributing his part toward the invention.

True, it is, that the appellants introduced in evidence, over objection, an article purporting to be a review of some statements or comments alleged to have been made by one of the three, Vogt, to the effect that he had made three inventions, one of which was the German patent

No. 387,058 which appellants contend is the same as the patent here involved. There was no testimony about this article and whether or not Vogt actually made any comments, and if he did just what they were, has not been legally established. The trial court admitted the article with the limitation that it was evidence only of its own existence and not of the truth of the statements therein contained. But Vogt is alleged to have written another article in 1926, Vol. 5, page 1641, in which it is stated with reference to the invention here that 'the necessary labors were carried out'' by him and his two associates ''during the period from 1918 to 1924 in equal participation.'' This completely neutralizes the weight, if any, to be given to the earlier statements but in fact no weight should be given to either.

The appellants further allege that appellees tried to prevent them from securing certain facts from Vogt, but the record shows that they were trying to secure facts which under the law of Germany they were not entitled to have, and that someone tried to bribe Vogt. A German court enjoined him from disclosing what he should not. There was a legal way for appellants to secure any information which Vogt had, and not only any information that Vogt could give them, but also any facts which Massole, the third joint inventor, knew, if they really had desired it, for neither Vogt nor Massole is in any way connected with the Tri-Ergon Corporation. His or their deposition could have been taken on notice or they could have been brought over here to testify at the trial, but appellants did neither, and so far as the record goes, they did not even attempt to do so. They chose rather to rest on inuendoes and insinuations. This does not overcome, first, the presumption of genuine joint invention by the three persons who signed the application and swore that they had jointly worked out the invention, and, second, the unequivocal testimony of Dr. Engl that they jointly invented the apparatus and methods here involved.

Under any fair interpretation of the evidence and proper application of the law thereto, this defense must fail.

Another defense relied upon by appellants is that the United States patent is for the same invention as the German patent No. 387,058.

If this is so the application for the United States patent was not filed in time and it is accordingly invalid. In order to show that the inventions, though similar, are really very different, the appellees submitted an interlined copy of the claims in issue, together with the disclaimer, showing the features contained in the United States patent which were not disclosed in the German patent and also the features disclosed in the German patent but not claimed therein.

In claim 5 the patentees claim a *"toothed cylinder over a portion"* (of the periphery of which the ribbon or film passes and) *"the teeth of said cylinder engaging"* . . . (the perforations of the ribbon) of *"said cylinder"*. The above quoted, interlined provisions are not contained in the German patent. This refers to the toothed cylinder "r" in Fig. 1. In the specifications this toothed cylinder is called a "sprocket" and the film passes over a portion of its periphery adjacent the translation point. At the same time the teeth of the cylinder engage in the perforations of the ribbon or film which moves uniformly by or over the translation point. The film is wrapped over or about a portion of this toothed cylinder adjacent the translation point, and the engaging of the perforations in the film with the teeth of the cylinder harness, as it were, the film to the flywheel so that the two move as one without any slippage. The German patent neither disclosed nor claimed a toothed cylinder nor any cylinder around which the film is thus wrapped to harness the film and flywheel. Instead the German patent discloses a pair of smooth rollers with which the film has a mere tangential contact which cannot operatively harness the flywheel and film to cause the

film to move as one with the flywheel to give it the necessary uniformity of movement.

In claim 7, the combination includes a cylinder *"over a portion of the periphery of which"* the carrier passes, and a driving member *"coaxial with said shaft, a resilient connection between said driving member and flywheel and stop means for limiting the amount of yielding of said resilient connection"*. The German patent neither disclosed nor claimed the above quoted portions.

The "driving member" is the arm represented by the numeral 2 in Fig. 5 and is coaxial with the shaft that connects the "flywheel" and the "cylinder", "over a portion of the periphery of which" the film passes.

The "resilient connection" is the spring represented by the numeral 3 in Fig. 5 and is used between the flywheel and its driving member to prevent any irregularities in the motor, or gearing between the motor and the flywheel. The flywheel thus runs more uniformly and smoothly and imparts its own uniformity and smoothness of motion to the film.

The *"stop means"* for limiting the amount of "yielding" or stretching of the spring are represented by the numerals 5, 5 in Fig. 5. In starting and stopping the machine, the arm 2 pulls upon the spring and stretches it until the arm rests against the stops 5-5. After the machine gets up speed, the flywheel runs largely under its own momentum, the tension on the spring is released and and it no longer comes into engagement with the stops. Thereafter the little power required to keep the flywheel running is transmitted to it through the spring.

Claim 9 is a method claim and refers to the translation of sound from a film record *"which comprises flexing the film arcuately longitudinally at the point of translation"* and rapidly and uniformly moving the film "in a circumferential direction" past said point.

The element of this claim not disclosed in the German patent is the arcuate bending feature of the film secured

by passing the film over an arched or curved surface at the translation point. The important purpose of this longitudinal bending is to hold the film in exact focus for the recording and reproducing line of light which impinges on the film.

Longitudinal bending, as stated above, prevents the film from curling transversely, as it is naturally inclined to do, avoids depressions and keeps the sound track portion of the film in focus.

In claim 13 it is stated that *"the space between said lens and the film being free of obstructions to said light"*. This element not disclosed by the German patent is directed to the idea that there is no physical slit or other obstruction between the lens projecting the light line and the film. If any obstruction were close to the film it would gather dirt and scratch the film and interfere with the transmission of the width of the light line as projected, such as would be caused by a mechanical slit.

In the disclaimer of claim 17, it is provided that *"a substantial portion of the periphery of the cylinder is in contact with the carrier in its travel from the intermediate point to said sprocket."*

This is not disclosed in the German patent and refers to the arrangement where the film lies in contact with a substantial portion of the periphery of the flywheel cylinder in the travel of the film from the translation point to the feeding sprocket as illustrated in Fig. 2 of the patent. The function of this element is to smooth out any small irregularities or vibrations that might otherwise be transmitted along the length of the film from the feeding sprocket to the translation point.

In claim 19 the film "is *yieldingly pressed into contact with a supporting area immediately adjacent the point of translation, such pressure cooperating with the inertia control in the elimination of irregularities in the film motion.*"

The feed sprocket may set up very fine irregularities in the length of the film between the feed sprocket and the translation point. This is prevented by the spring-pressed rollers dr^1 and dr^2 in Fig. 2 of the patent. This element is not disclosed in the German patent.

There are many features disclosed in the German patent which are not claimed and in law the patent stands as though the features were not disclosed. Davis-Bournonville Co. *v.* Alexander Milburn Co., 1 Fed. (2d) 227, 234.

All of the above mentioned elements, not disclosed in the German patent, coact with all the others in the combination. If they were eliminated, the results of the combination could not be obtained. It is evident that we have in this patent a combination and method not disclosed in the German patent.

All the other defenses have been considered, but we think that they are not substantial, and the decree is affirmed.

A true Copy:
Teste:

Clerk of the United States Circuit Court of Appeals for the Third Circuit.